

## **APPENDIX C:**

### **Water Quality Regulatory Information**

#### **Understanding Designated Uses, Water Quality Standards, Basin Assessments, and Problem Pollutants**

In order to identify water quality problems in the west central White River watershed in Morgan County, Indiana, stakeholders in the watershed planning process felt that readers of this plan needed to understand the basis for measuring or quantifying water quality problems. Consequently, this section of the watershed plan provides a technically detailed discussion of how water quality standards, the measures of quality in rivers, streams, and lakes, are developed and used to protect water quality. This section of the plan will also briefly discuss the programs actively monitoring water quality within the watershed and explain the process used to assess the quality of surface waters in the watershed.

#### **Understanding Designated Uses and Water Quality Standards**

Rivers, streams, and lakes have naturally occurring plants, animals, and microorganisms that break down, or consume, water quality contaminants. This process, in conjunction with the rate and volume of stream flow, oxygen levels, temperature, and other naturally occurring conditions dictates the rate at which streams are able to breakdown and absorb contaminants. Historically, many waterbodies have received more contaminants than they could naturally absorb. Waterbodies that received more contaminants than they can absorb are considered to be polluted.

In order to prevent waterbodies from becoming polluted and to implement protections for already contaminated waterbodies, in 1972, Congress established the Clean Water Act and the National Pollutant Discharge Elimination System

(NPDES) to regulate the discharges of pollutants into lakes, rivers, and streams from industrial and municipal wastewater treatment plants, and other direct sources of pollution. The NPDES Program uses water quality standards and discharge limitations to restrict the introduction of contaminants that would exceed a waterbody's ability to naturally absorb and consume pollutants.

In order to determine appropriate discharge limitations for a NPDES regulated facility, the State of Indiana first established designated uses and water quality standards to support those uses for the waters of the State. Indiana's current designated uses for surface waters are described in **Table 3-1**.

A water quality standard is the combination of a designated use (i.e. swimmable or fishable) and a narrative or numeric water quality criterion designed to protect that use (i.e. an ammonia discharge limit of 3.0mg/L or an E. coli discharge limit of 125 cfu/100ml). Designated uses and resulting water quality standards form the foundation for the NPDES program to control the amount of pollutants being discharged into the rivers, streams, and lakes of Indiana.

In Indiana, effluent limitations are implemented through NPDES permit conditions established by the Indiana Department of Environmental Management (IDEM). Effluent limitations are designed to limit the quantities, discharge rates, and concentrations of pollutants that are discharged, from "point sources" of pollution. These limitations represent the minimum effluent quality or quantity that must be achieved prior to discharge of a treated wastewater into a waterbody (river, stream, or lake). The NPDES permits issued by the IDEM contain specific effluent limits designed to meet the State's water quality standards.

**Table 3-1: Surface Water Use Designations and Classifications**

<p><b>The following uses are designated by the Indiana Water Pollution Control Board (327 IAC 2-1-3):</b></p> <ul style="list-style-type: none"><li>• Surface waters of the state are designated for full-body contact recreation during the recreational season (April through October).</li><li>• All waters, except limited use waters, will be capable of supporting a well-balanced, warm water aquatic community.</li><li>• All waters, which are used for public or industrial water supply, must meet the standards for those uses at the point where water is withdrawn.</li><li>• All waters, which are used for agricultural purposes, must meet minimum surface water quality standards.</li><li>• All waters in which naturally poor physical characteristics (including lack of sufficient flow), naturally poor or reversible man-induced conditions, which came into existence prior to January 1, 1983, and having been established by use attainability analysis, public comment period, and hearing may qualify to be classified for limited use and must be evaluated for restoration and upgrading at each triennial review of this rule.</li><li>• All waters, which provide unusual aquatic habitat, which are an integral feature of an area of exceptional natural beauty or character, or which support unique assemblages of aquatic organisms may be classified for exceptional use.</li><li>• All waters of the state, at all times and at all places, including the mixing zone, shall meet the minimum conditions of being free from substances, materials, floating debris, oil, or scum attributable to municipal, industrial, agricultural, and other land use practices, or other discharges:<ul style="list-style-type: none"><li>○ that will settle to form putrescent or otherwise objectionable deposits,</li><li>○ that are in amounts sufficient to be unsightly or deleterious,</li><li>○ that produce color, visible oil sheen, odor, or other conditions in such degree as to create a nuisance,</li><li>○ which are in amounts sufficient to be acutely toxic to, or to otherwise severely injure or kill aquatic life, other animals, plants, or humans, or</li><li>○ which are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such degree as to create a nuisance, be unsightly, or otherwise impair designated uses.</li></ul></li></ul>
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**The 305(b) Process – Assessing Indiana’s Watersheds**

In order to assess the effectiveness of a State’s water quality standards, effluent limitations, and NPDES permitting program, Section 305(b) of the Clean Water Act (CWA) requires each State to develop a program to monitor the quality of its waters and prepare a report describing their quality. This process of monitoring and assessment

produces an evaluation of the degree to which each waterbody supports a State's designated uses and water quality standards. Each waterbody assessed is rated as supportive, partially supportive, or not supportive of its designated uses. **Table 3-2** illustrates the criteria used by the IDEM for assessing a waterbody’s ability to support its designated uses.

**TABLE 3-2: CRITERIA FOR EVALUATING DESIGNATED USE SUPPORT\***

Parameter	Fully Supporting	Partially Supporting	Not Supporting
Aquatic Life Use Support			
Toxic Pollutants	Metals were evaluated on a site-by-site basis and judged according to magnitude of exceedance and the number of times exceedances occurred.		
Conventional Inorganic Pollutants	There were very few water quality violations, almost all of which were due to natural conditions.		
Benthic aquatic macroinvertebrate Index of Biotic Integrity (mIBI)	mIBI ≥ 4.	mIBI < 4 and ≥ 2.	mIBI < 2.
Qualitative habitat use evaluation (QHEI)	QHEI ≥ 64.	QHEI < 64 and ≥ 51.	QHEI < 51.
Fish community (fIBI) (Lower White River only)	IBI ≥ 44.	IBI < 44 and ≥ 22	IBI < 22.
Sediment (PAHs = polynuclear aromatic hydrocarbons. AVS/SEM = acid volatile sulfide/ simultaneously extracted metals.)	All PAHs ≤ 75 <sup>th</sup> percentile. All AVS/SEMs ≤ 75 <sup>th</sup> percentile. All other parameters ≤ 95 <sup>th</sup> percentile.	PAHs or AVS/SEMs > 75 <sup>th</sup> percentile. (Includes Grand Calumet River and Indiana Harbor Canal sediment results, and so is a conservative number.)	Parameters > 95 <sup>th</sup> percentile as derived from IDEM Sediment Contaminants Database.
Indiana Trophic State Index (lakes only)	Nutrients, dissolved oxygen, turbidity, algal growth, and sometimes pH were evaluated on a lake-by-lake basis. Each parameter judged according to magnitude.		
Fish Consumption			
Fish tissue	No specific Advisory*	Limited Group 2 - 4 Advisory*	Group 5 Advisory*
* Indiana Fish Consumption Advisory, 1997, includes a state wide advisory for carp consumption. This was not included in individual waterbody reports because it obscures the magnitude of impairment caused by other parameters.			
Recreational Use Support (Swimmable)			
Bacteria (cfu = colony forming units.)	No more than one grab sample slightly > 235 cfu/100ml, and geometric mean not exceeded.	No samples in this classification.	One or more grab sample exceeded 235 cfu/100ml, and geometric mean exceeded.

\*From Indiana Water Quality Report for 1998

### Participants in the 305(b) Process

In Indiana, the primary agencies involved in collecting, analyzing, and assessing surface water quality data for the state's 305(b) report are as follows:

#### 1. Indiana Department of Environmental Management (IDEM), Office of Water Quality, Assessment Branch – River Basin Monitoring Program

The Water Quality Assessment Branch of the Office of Water Quality (OWQ) is responsible for assessing the quality of water in Indiana's lakes, rivers and streams for the state's 305(b) Report. In 1995, in response to the growing demand for more and better water quality data, the IDEM Water Assessment Branch developed a Surface Water Quality Monitoring Strategy. The strategy was designed to direct the efforts of the Assessment Branch in the light of increased workloads, as well as new 305(b) reporting guidelines to states from the Environmental Protection Agency (EPA).

IDEM's monitoring strategy was crafted to provide technical data and information to support the 305(b) report, the NPDES permitting program, and the annual Fish Consumption Advisory. As a result, the Assessment Branch operates on a rotating basin approach that is designed to sample, analyze, and assess one of the state's five (5) major river basins each year and to provide a statewide assessment every 5 years.

#### River Basin Monitoring Cycle

The five-year rotating river basin monitoring cycle began in 1996 and continues to be the basis for Indiana's Surface Water Quality Monitoring Strategy. The state of Indiana has been divided geographically into five major hydrological groupings or sampling units for the purpose of sampling, analysis and assessment. The five-year monitoring cycle listed below indicates

the timeframes by which the IDEM plans to complete surface water quality surveys throughout the state.

Major River Basin	Sampling Year(s)
• West Fork White River and Patoka River Basins	1996, 2001
• East Fork White River and Whitewater River Basins	1997, 2002
• Upper Wabash River Basin	1998, 2003
• Lower Wabash River and Kankakee River Basins	1999, 2004
• Great Lakes and Ohio River Basins	2000, 2005

#### IDEM Assessment Branch Monitoring Programs

The Assessment Branch is composed of two sections that work together to collect data and assess the quality in Indiana's surface waters via the 305(b) report. These sections are as follows:

- **The Surveys Section** is responsible for collecting chemical and physical water quality data, assessing the quality of Indiana's river and streams, and determining the effect of approximately 1,800 permitted point sources on the rivers and streams of Indiana. The Surveys Section provides data for models, 305(b) water quality reports and wasteload allocations for NPDES permitting purposes, as well as an assessment of non-point sources. The OWQ biological and surface water monitoring programs identify stream reaches, watersheds or segments where physical, chemical and/or biological quality has been or would be impaired by either point or nonpoint sources. This information is used to help allocate

waste loads equitably among various pollutant sources in a way that would ensure that water quality standards are met along stream reaches in each of the nearly 100 stream segments in Indiana.

- **The Biological Studies Section (BSS)** is responsible for determining the biological integrity of aquatic communities in Indiana lakes, rivers and streams. They do this through a variety of field, laboratory, and cooperative studies that involve several different forms of aquatic life as well as surface water and sediment chemistry, physical and habitat information. These data are used to determine compliance with the existing narrative biological criteria in the Indiana water quality standards, and form the basis for new specific numerical biological criteria. Additionally, the data determine the extent of ecological harm and recovery, and make correlations to physical and/or chemical impairments that may occur.

The BSS conducts fish tissue and sediment sampling to assess the level and extent of contamination by toxic and bioaccumulating substances whose concentrations in other environmental media are often too low to be easily measured with routine sampling and laboratory procedures. The fish tissue monitoring program provides the majority of data used to make decisions for Indiana's fish consumption advisories. In addition these data are also used for wildlife health risk assessments for fish-eating birds and mammals, and to provide the information needed to develop models to assess changes in Indiana ecosystems that affect aquatic life and human health.

The BSS also oversees lake monitoring efforts conducted under contract by staff and students of the Indiana University School of Public and Environmental Affairs, as well as by a group of trained volunteer monitors. Both programs

include the monitoring of physical, chemical and/or biological parameters useful in assessing the impacts of nutrients in Indiana lakes and reservoirs.

## **2. The Indiana Department of Natural Resources (IDNR) - Division of Fish and Wildlife**

The IDNR Division of Fish and Wildlife maintains a network of fishery biologists that conduct research throughout the state to assess and manage fishery populations in Indiana's rivers, streams and lakes. The IDNR biologists routinely conduct macroinvertebrate sampling, electrofishing, netting surveys, and creel surveys to evaluate the status of local fisheries. The IDNR works cooperatively with the IDEM Biological Studies Section to assess the State's fisheries populations and to provide data to the Indiana State Board of Health to be used in the annual Fish Consumption Advisory.

## **The 303(d) List - Impaired Streams and Problem Pollutants**

As a result of the waterbody assessments performed in the 305(b) process, a number of the rivers, streams, and lakes within the state are determined to be only partially supportive or non-supportive of each waterbody's designated uses. Section 303(d) of the CWA requires that waters not meeting or not expected to meet water quality standards after the implementation of regulatory controls (NPDES permits) to be compiled and listed as "impaired waters" by the IDEM. In other words, impaired waters are considered to be those waterbodies that don't meet the state's water quality standards for one or more designated uses.

## **Total Maximum Daily Loads (TMDL)**

Based on Indiana's 2002 303(d) list, the streams listed have been identified as having impairing pollutants by the IDEM. Streams identified on the state's 303(d) list are also required to undergo a planning process

designed to reduce the amount of the pollutant(s) coming from both point and nonpoint sources of pollution. This process is called Total Maximum Daily Loads (TMDL).

The IDEM defines a TMDL as “a process that leads to the quantification of the amount of a specific pollutant discharged into a waterbody that can be assimilated and still meet the water quality standards (designated uses).” This is achieved by specifying the amount of pollutant reductions necessary from point and non-point sources in order to meet the water quality standard set for an impairing pollutant. EPA is responsible for ensuring that TMDLs are completed by States and for approving completed TMDLs.

#### **IDEM’s TMDL Strategy**

Under the TMDL approach, states establish priorities and schedules for TMDL development. When TMDL development occurs, IDEM via the TMDL process determines the required reductions in pollutant loads or other actions needed to meet water quality goals. This process promotes a watershed approach driven by local needs and directed by the State's list of priority waterbodies. The overall goal in establishing the TMDL is to implement the pollutant reductions necessary from point and nonpoint sources of pollution that are necessary for a waterbody to meet water quality standards.

IDEM’s Office of Water Quality has reorganized its work activities around a five-year rotating basin schedule. The waters of

the state have been grouped geographically into major river basins, and water quality data and other information will be collected and analyzed from each basin, or group of basins, once every five years. The schedule for implementing the TMDL Strategy is proposed to follow this rotating basin plan to the extent possible. Supplemental data collection (i.e. collection during a year other than the one prescribed in the IDEM’s Surface Water Quality Monitoring Strategy) may also be required to complete the TMDL process.

IDEM’s TMDL Strategy discusses activities to be accomplished in three phases. Phase One involves planning, sampling and data collection and will take place the first year. Phase Two involves TMDL development (water quality modeling) and will occur in the second year. Phase Three is the TMDL implementation period and is expected to occur during the third year; however, it is expected that some phases, especially the implementation of a TMDL, may take more than one year to fully accomplish.

The TMDL goals that are chosen in conjunction with watershed stakeholders during Phase Two will be used to develop a plan to implement the TMDL. During this process, stakeholder participation will be essential. IDEM’s Basin Coordinator, in conjunction with the stakeholder groups, will develop a plan to implement the TMDL. Once the draft plan has been finalized through comments from stakeholder groups and IDEM, the plan becomes a “final draft” and is open to public review.

### **Regulatory Agency Responsibilities**

Currently, most major sources of pollutants are regulated and enforced under by Federal and/ or State agencies. In Indiana, the Indiana Department of Environmental Management (IDEM) has been delegated authority by the United States Environmental Protection Agency (U.S. EPA) to regulate sources of pollution via the National Pollutant Discharge Elimination System (NPDES) Program. In addition to federal and state regulations, many communities also initiate additional local water quality protections through implementation of local zoning and ordinance controls. Persons interested in local initiatives to protect water quality can find more information on these efforts by contacting their county health department or municipal department of public works. In addition to IDEM, the Indiana Department of Natural Resources and the Morgan County Soil and Water Conservation District also provide inspection and regulatory authority over the erosion control requirements.

### **Regulatory Agencies and Responsibilities in Indiana:**

Many federal, state, and local authorities share the responsibility of regulating, enforcing, and or managing water quality programs that protect water resources and public health across the nation. In Indiana, these agencies include:

#### **Department of Interior:**

- U.S. Geological Survey (USGS)
- U.S. Fish and Wildlife Service (USFWS)

#### **Department of Agriculture:**

- Natural Resources Conservation Service (NRCS)
- Farm Services Agency (FSA)

#### **U.S. Environmental Protection Agency:**

- Office of Water

#### **U.S. Army Corps of Engineers:**

- Section 404 Program: Dredge/fill Permits

### **The Indiana Department of Natural Resources (IDNR):**

The State Department of Natural Resources, Division of Water, is charged by the State of Indiana to maintain, regulate, collect data from, and evaluate Indiana's surface and ground water resources. The Division of Water is comprised of 17 sections divided between three branches:

Engineering, Planning, and Regulation. The Division issues permits for: (1) alteration of the bed or shoreline of a public freshwater lake; (2) construction or reconstruction of any ditch or drain having a bottom depth lower than the normal water level of a freshwater lake of 10 acres or more and within ½ mile of the lake; (3) construction within the floodway of any river or stream; (4) placing, filling, or erecting a permanent structure in; water withdrawal from; or material extraction from; a navigable waterway; (5) extraction of mineral resources from or under the bed of a navigable waterway; and (6) construction of an access channel.

The State Department of Natural Resources, Division of Reclamation, is responsible for implementing the federal Surface Mining Control and Reclamation Act (SCMRA). The Division of Reclamation issues permits to coal mining companies, which allows them to mine coal in Indiana. The Division of Reclamation works closely with the IDEM to protect the waters of the state through the issuance and enforcement of construction permits and NPDES permits involving coal mining activities. The Division of Reclamation has primary responsibility for the compliance and enforcement of all coal mining and wastewater permits.

### **The Indiana Department of Environmental Management (IDEM):**

The Indiana Department of Environmental Management's Office of Water Management

(OWM) implements and enforces the Clean Water Act. With oversight from U.S. EPA Region V office in Chicago, Illinois, IDEM's Office of Water Management (OWM) Wastewater Permitting Branch maintains responsibility for Indiana's NPDES permit program and for issuing, modifying, revoking and reissuing, terminating, denying, monitoring, and enforcing permits for the discharge of pollutants from point sources and imposing and enforcing pretreatment requirements. The Permitting Branch issues NPDES permits to wastewater dischargers in Indiana to regulate compliance with the Clean Water Act. It also issues construction permits for facilities needing to construct, install or modify any water pollution treatment control facility or sanitary sewer.

IDEM's jurisdiction includes all the "waters of the state" of Indiana, which is defined as "accumulations of water, surface and underground, natural and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon this state". However, the term does not include any private pond, or any pond, reservoir, or facility built for reduction or control of pollution or cooling of water prior to discharge unless the discharge causes or threatens to cause water pollution.

**The State Department of Health (ISDH):**

The State Department of Health is responsible for training and providing technical assistance to county health departments regarding residential septic systems. In addition, the Department also is responsible for issuing construction permits to all commercial on-site non-discharging sewage disposal systems.

**Morgan County Health Department (MCHD):**

Health Departments are responsible for issuing residential septic permits. Some counties also may require a county-issued construction permit for commercial on-site non-discharging sewage disposal systems.



## **Regulatory Programs**

Regulations governing water quality pollutants are usually differentiated based on where the pollutants are generated; usually referred to as either point or nonpoint source pollutants. Point sources (PS) have a known discharge point, such as industrial facility discharges or municipal sewage treatment plant outfall pipes. Nonpoint sources (NPS) of pollution are generated by rainfall or melting snow moving over and through the ground. As the runoff moves, it picks up and carries pollutants from streets, parking lots, and construction sites and deposits them into

### **Wastewater Programs: National Pollutant Discharge Elimination System (NPDES) Program**

As a result of the 1972 Clean Water Act, point source wastewater dischargers are required to have a National Pollutant Discharge Elimination System (NPDES) permit that establishes pollution limits, and specifies monitoring and reporting requirements. NPDES permits regulate sanitary and industrial wastes that are collected in sewers and treated at municipal wastewater treatment plants that discharge into wastewater collection systems or discharge directly into receiving waters.

The United States Environmental Protection Agency (US EPA) and the Indiana Department of Environmental Management (IDEM) Office of Water Management (OWM) Wastewater Permits Branch can issue two different types of NPDES permits:

- **General Permits**, or permits-by-rule, are issued for specific types of discharges such as storm water runoff from construction sites, non-contact cooling water, or stone quarry discharges. The activities covered under each specific type of general permit are very similar in nature; therefore, each such activity is regulated under the rules of a general permit.

lakes, rivers, wetlands, and underground sources of drinking water.

Generally, both point and nonpoint sources of pollution are regulated by authorized agencies under four main programmatic areas; Wastewater, Wet Weather (CSOs and Stormwater), Drinking Water, and Total Daily Maximum Loads. This section will discuss the various regulations governing the point and nonpoint source regulations that are driving the need for increased communication and coordination on water quality issues.

- **Individual Permits** are site-specific and issued to dischargers on a case-by-case basis. The issuance process provides opportunity for public input or appeal. The applications for individual permits are of varying degrees of complexity, and can require extensive narrative explanations of planned treatment activities.

The following individual permit types are processed and issued by the US EPA and the IDEM OWM in the State of Indiana:

### **Publicly Owned Treatment Works (POTW) Permits**

Sources that discharge or intend to discharge wastewater containing pollutants, or treated wastewater that could potentially contain pollutants, from a point source into any streams, lakes, ponds, or other waters of Indiana and the United States must have an NPDES wastewater permit. A NPDES discharge permit also serves as an operating permit, under which the owner/operator generates and/or collects wastewater for discharge.

Permits are required for facilities that treat and disinfect municipal wastewater prior to discharge to any waters of the State. Two types of permits are issued:

- **Major Discharge** = discharges more than one (1) million gallons per day.

- Minor Discharge = discharges less than one (1) million gallons per day.

Since enactment of the 1972 Federal Water Pollution Control Act, all POTWs are required to provide secondary treatment, at a minimum. A primary component of secondary treatment is the reduction of biochemical oxygen demand (BOD) and chemical oxygen demand (COD), which can deplete dissolved oxygen and kill fish and other aquatic life in waterbodies. Secondary treatment can also reduce ammonia, and some facilities also must remove phosphorus. In addition, secondary treatment may reduce concentrations of some heavy metals. Finally, the wastewater is required to be disinfected during the recreational season (April 1 to October 31) to reduce disease-causing microorganisms prior to discharge.

#### **Industrial Wastewater Pretreatment Permit (IWPP)**

Industrial Wastewater Pretreatment Permits are for industrial process wastewater that is treated to remove contaminants prior to discharge into a municipal wastewater collection system. Treatment is similar to that associated with NPDES industrial permits, but the effluent is discharged into a municipal sewer rather than directly into a stream or other body of water. As a result, this wastewater receives further treatment at the municipal POTW prior to being discharged to "waters of the state".

Currently 45 Indiana municipalities, including the City of Fort Wayne, have EPA-delegated pretreatment programs in place, under which they regulate industrial discharges to their municipal wastewater collection systems. In addition, IDEM issues IWPP to industries in those towns and cities that do not have a local pretreatment program in place.

#### **Concentrated Animal Feeding and Aquaculture Operation Permits (CAFO)**

Concentrated animal feeding operations are point sources subject to the NPDES permit program. However, the need for such a permit is conditioned on an on-site inspection, which determines that a permit is required, based on either;

- Number of animals, per category, housed at a facility,
- Whether pollutants from the facility are discharged into the "waters of the state" through a man-made ditch or flushing system, or
- If pollutants are discharged directly into the waters of the State which originate outside the facility, but pass over, across, or through the facility.

Otherwise, the disposal of wastes generated at such a facility are regulated as a solid waste under a Confined Feeding Approval administered by the IDEM Office of Solid and Hazardous Waste (OSHW) Land Use Branch. Aquaculture, or concentrated aquatic animal production facilities, as defined in the U.S. Code Federal of Regulations at 40 CFR 122.24 also are point sources subject to NPDES permit requirements. However, as with concentrated animal feeding operations, the need for such a permit is conditioned on an on-site inspection which determines whether a permit is required, based on:

1. the location and quality of the receiving waters,
2. whether the facility is a significant contributor of pollution to the "waters of the state", or
3. if the holding, feeding and production capacities of the facility, are such that it is determined that the facility does not need an NPDES permit because;
  - a) The aquatic animals are raised in a structure that discharges less than thirty (30) days per year, and
  - b) Produces less than 20,000 lbs. of cold water, or

100,000 lbs. of warm water aquatic animals per year.

Discharges into aquaculture projects, as defined in 40 CFR 122.25 also are subject to the NPDES permit program. However, this applies only to those operations that feature the confinement of aquatic animals within the waters of the State, or of the United States.

#### **Wet Weather Programs:**

In addition to point source NPDES permits, NPDES permits are also required for certain nonpoint sources (NPS) of pollution, such as Municipal Separate Stormwater Systems (MS4s), storm water runoff from various categories of industrial facilities, and runoff from construction sites. Nonpoint source NPDES permits require permittees to develop storm water management plans and education programs necessary to protect water quality.

#### **Combined Sewer Overflow (CSO) Requirements**

Prior to implementation of the of the Federal Water Pollution Control Act or the Clean Water Act, many cities and towns in Indiana and across the nation constructed combined sewer systems rather than separate sanitary and storm sewer systems. At the time, these systems were a cost-effective means of providing sewer service and improved drainage via a wastewater collection system that conveys sanitary wastewater and storm water through the same pipe.

Combined sewer systems were designed to carry wastewater flow during dry weather conditions and as much storm water flow as possible during wet weather events. Whenever the maximum capacity of these CSSs is exceeded, the excess flow is discharged directly into adjacent streams through overflow structures. While these overflows were intended to prevent excess flow from backing up in the collection system or overwhelming the wastewater treatment plant, Combined Sewer Overflows

(CSO) result in the discharge untreated wastewater directly into river, streams, and lakes.

In Indiana, one hundred and eight (108) municipalities, including the City of Fort Wayne, have combined sewer systems with a total of over nine hundred (900) CSO outfalls. These CSO outfalls are point source discharges that are subject to NPDES permit requirements. As a result, the CSO requirements established in the Indiana CSO strategy are incorporated into individual municipal wastewater treatment plant NPDES permits (both major and minor permits) for CSO communities in Indiana.

In May 1996, the IDEM finalized its strategy for bringing CSO communities into compliance by the year 2005. This strategy is composed of a two (2) phase plan.

Phase I requires CSO communities to demonstrate implementation of minimum technology-based control plans, including the following:

- Proper operation and regular maintenance of sewers and POTW.
- Maximum use of the collection system for storage.
- Review and modification of pretreatment programs.
- Maximization of flow to the POTW for treatment.
- Prohibition of CSO discharges during dry weather.
- Control of solid and floatable materials in CSO discharge.
- Pollution prevention programs.
- Public notification of CSO occurrences and impacts.
- Review and revise sewer use ordinances to prevent additional CSOs and promote future designs to help minimize the impact of wet weather events
- Establish a Stream Reach Characterization and Evaluation protocol for assessing CSS and CSO discharges, and reporting on the impact

of both CSOs and the efficacy of CSO controls on receiving streams

Phase II requires CSO communities to establish a Long Term Control Plan (LTCP) with Water Quality Based Effluent Limits (WQBELs). The plan should have affordable and enforceable WQBEL goals with control alternatives developed with public participation. Phase II plans could require implementation schedules of 10 to 15 years. The goal of Phase II is to reduce overflow events to 4, or fewer, per year, or to capture 85 percent of all flows, system-wide.

### **Stormwater Phase I and II NPDES Permits (Rule 13)**

In response to a desire for more comprehensive NPDES requirements for discharges of storm water, in 1987 Congress amended the CWA to require the Environmental Protection Agency (EPA) to establish phased NPDES requirements for storm water discharges. To implement these requirements, on November 16, 1990, EPA published the initial permit application requirements for certain categories of storm water discharges associated with industrial activity and for discharges from municipal separate storm sewer systems (MS4s).

The Phase I program addressed sources of storm water runoff that had the greatest potential to negatively impact water quality. Under Phase I, EPA required NPDES permit coverage for storm water discharges from:

- "Medium" and "large" municipal separate storm sewer systems located in incorporated places or counties with populations of 100,000 or more; and
- Eleven categories of industrial activity, one of which is construction activity that disturbs five or more acres of land.

Even with implementation of Storm Water Phase I requirements, pollutants in storm water discharges continued to remain a significant source of environmental impacts to surface waters as documented in the

"National Water Quality Inventory, 1994 Report to Congress". This report provided a general assessment of water quality based on biennial reports submitted by the States under Section 305(b) of the Clean Water Act. The report indicated that storm water discharges from a variety of sources including separate storm sewers, construction activities, waste disposal, and resource extraction activities were major causes of water quality impairment.

As a result of ongoing concerns regarding the water quality impacts of storm water runoff, on January 9, 1998, the EPA proposed the development of NPDES storm water regulations for Phase II of the NPDES Storm Water Program. The Phase II regulations established an application process for all Phase II storm water discharges, which include all discharges composed entirely of storm water, except those specifically classified as Phase I dischargers. Such discharges include storm water from small municipal separate storm sewer systems, commercial sites, and institutional facilities. The Final Rule for Phase II of the NPDES Storm Water Program was published in the Federal Register on December 8, 1999.

The State of Indiana, specifically the IDEM, is responsible for implementation of Phase II of the NPDES Storm Water Program. Consequently, the IDEM has developed a new storm water general permit rule (327 IAC 15-13) in order to comply with Federal storm water program mandates. Regulated conveyance systems include roads with drains, municipal streets, catch basins, curbs, gutters, storm drains, piping, channels, ditches, tunnels and conduits.

Indiana's final Phase II Storm Water Rule was adopted as 327 IAC 15-13 on March 12, 2003. This rule is commonly known as "Rule 13" and contains the requirements for Indiana's statewide general permit for storm water discharges.

**Storm Water Runoff Associated with Industrial Activity (Rule 6)**

Discharges of runoff which have intermingled with non-storm waters or come into contact with certain wastes, discharges from certain facilities subject to federal storm water effluent limitations guidelines, or discharges into receiving streams and waters listed as Outstanding State Resource Waters or as Exceptional Use Streams (Other Runoff Associated with a Industrial Activity is eligible for a general, Rule 6, NPDES Storm Water Runoff Permit).

**Drinking Water:**

In 1996, amendments to the Safe Drinking Water Act placed a new focus on protecting drinking water by requiring States to implement Source Water Assessment and Protection (SWAP) programs to identify potential threats and implement protection efforts in areas serving as sources of drinking water. As a result of these source water protection requirements, local water utilities within the Maumee River Basin are in various stages of implementing Source Water Assessment and Wellhead Protection (WHP) Programs to protect against drinking water contamination.

**Source Water Assessment Programs (SWAPs)**

In 1997, Indiana began implementing Source Water Assessment Programs (SWAPs) to assess areas of potential threats and initiate protection efforts in areas that serve as sources of drinking water. Source water is untreated water from streams, rivers, lakes, or underground aquifers, which is used to supply private wells and public drinking water. While some treatment is usually necessary, ensuring that source water is protected from contamination can reduce the costs of treatment and risks to public health.

Protection of drinking water at the source can be successful in providing public health protection and reducing the treatment challenge for public water suppliers. Source water quality can be threatened by many everyday activities and land uses, ranging from industrial wastes to the chemicals applied to suburban lawns. The land area that impacts a wellfield is called an aquifer recharge or wellhead protection area and the land area that impacts both surface water and groundwater quality is termed the watershed.

In February of 1999, State Source Water Assessment Programs (SWAP) were required to be submitted to EPA describing their plan to implement a program to analyze existing and potential threats to the quality of the public drinking water throughout the state. To fulfill the intent of the Source Water Assessment Program, Indiana required drinking water utilities using groundwater to implement Wellhead Protection Programs (see below) and utilities using surface water intakes to monitor and report on the following contaminants:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture,

stormwater runoff, and residential uses.

- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

Utilities are also required to develop an Annual Water Quality or Consumer Confidence Report in order to provide consumers with information about the quality of their drinking water.

The IDEM will provide the following four source water assessment elements for utilities that use surface water:

- Delineating (or mapping) the source water assessment areas (watersheds),
- Conducting an inventory of potential sources of contamination in the delineated area,
- Determining the susceptibility of the water supply to those contamination sources, and
- Releasing the results of the determinations to the public.

The Underground Injection Control (UIC) Program also works closely with the with State SWAPs and local governments to oversee underground injection of waste (Class I-V Wells) in order to prevent contamination of drinking water resources.

### **Wellhead Protection Program**

Wellhead protection refers to a state-mandated program requiring public water suppliers who provide drinking water from groundwater sources to plan and implement a program to protect groundwater near their wells. More specifically, a “wellhead protection area” must be established either by a “delineation” (typically done by a geologist) or, in cases where the system’s pumping capacity is less than 100,000 gallons per day, a 3000 foot radius can be drawn around each wellhead. For the larger systems that require the delineation, the boundaries are based primarily on one-year and five-year “time of travel” of groundwater as well as the actual physical boundaries and degree of confinement of the aquifer.

Upon establishment of the wellhead protection area(s), the public water supplier must then embark on a process which involves: the establishment of a Local Planning Team; the preparation of a Wellhead Protection Plan; and the implementation of that Plan. There are 7 primary requirements for the initial draft plan submittal to the State. These plan requirements include: planning team member information; delineation of wellhead protection area and associated technical information; a potential pollution source inventory; a management strategy with implementation timetable; a contingency plan; a description of public participation; and a description of a proposed public education program.

Plans including the requirements mentioned above were to be completed and submitted to IDEM by the following dates:

For public water suppliers serving a population of more than 50,000:	March 2000
For public water suppliers serving a population of 3,300-50,000:	March 2001
For public water suppliers serving a population of less than 3,300:	March 2002

### **Total Maximum Daily Load (TMDL) Program**

In cases where permits and effluents limitations are unable to protect a stream's ability to meet state water quality standards, IDEM and the US EPA are required to list streams that demonstrate water quality impairments, that are not the result of a compliance issue, under the provisions of the Clean Water Act. Streams identified on this list are required to undergo the Total Maximum Daily Load (TMDL) Process.

By definition, a Total Maximum Daily Load (TMDL) is the maximum amount of any given pollutant that a waterbody can absorb without violating water quality standards for designated uses, such as drinking water, aquatic life, and recreation. TMDL is also used to describe the process used for bringing a body of water back into compliance with water quality standards. This process involves assessing and/or measuring the probable sources of water quality problems in a water body and setting Waste Load Allocations (WLAs) for point source discharges and specific requirements and/or best management practices for non-point sources of pollutants that will bring the water body into compliance with water quality standards.

TMDLs are a requirement of Section 303(d) of the Clean Water Act that requires states to identify the waters within their boundaries that do not meet water quality standards. The list must identify the pollutant(s) or factor(s) responsible for the listing of each water body. States must then rank the waters on the list taking into account the severity of pollution and the designated uses of the waters. These rankings are used to set priorities for achieving water quality

standards. Each State is required to review the 303(d) list, make changes as necessary, and submit the list to the U.S.

Environmental Protection Agency (EPA) for approval in even-numbered years. Once a body of water is added to a State 303(d) list, a TMDL for that water body is calculated to meet water quality objectives.

TMDLs can and most likely will have an impact on municipal growth and development, operations, and quite possibly its economy. As a result of the waste load allocations (WLAs) calculated for a TMDL, additional pollution discharge limits could be applied to a community's wastewater treatment plant or to local industries, requiring additional treatment or possibly new technology. Additionally, a community may be required to control and treat stormwater runoff from their streets and parking lots. Even local farmers may be asked to use alternative methods in their operations to prevent fertilizers and pesticides from reaching rivers.

Once TMDLs are set, States will enforce them through permits and through management plans designed to prevent or limit runoff. Permits will include the pollutant limits and a schedule for compliance. In the meantime, States will continue to evaluate the waters in question and will modify the permits when appropriate.